

IN THE CLAIMS

Please amend claims to read as shown below. Changed text is underlined for ease of review.

Listing of Claims

5 1. through 20. (CANCELLED)

21. (AMENDED) A method for distributed medium access that enables transmission of frames on a channel in a wireless communication network comprising an access point and a plurality of stations illuminated by multiple beams of an antenna system emanating from said access point, in
10 which antenna system simultaneous communication on the same channel in opposite directions between said access point and any two stations covered by different beams is not possible, comprising the steps of:

 said access point and said stations transmitting according to an asynchronous contention-based medium access protocol that allows the initiation of transmission in continuous time by said
15 access point if a station is not transmitting and by a station if said access point is not transmitting; and

 requiring the access point with traffic to transmit in one or more beams to occupy or reserve all beams for any length of time, which may optionally be determined at the time of transmission, and terminating said transmissions or reservations on all beams simultaneously but
20 not necessarily at a predetermined time, thus enabling uplink transmissions to occur only when the access point is not transmitting.

22. The method for distributed medium access of claim 21, which further comprises:

 requiring all stations to refrain from uplink transmission at certain times, which are not necessarily periodic or determinable in advance, causing the channel to become available for
25 downlink transmissions.

23. (AMENDED) The method for distributed medium access of claim 21, which further comprises:

 the access point transmitting dummy frames on certain beams so as to cause downlink transmission on all beams to occur and terminate simultaneously.

30 24. The method for distributed medium access of claim 21, which further comprises:

the access point reserving the channel along a beam for a time duration by transmitting a frame on said beam, which frame contains said duration; and
a station covered by said beam determining whether the channel is available for transmission by maintaining a timer set to said duration.

5 25. (AMENDED) The method for distributed medium access of claim 21 which further comprises:

all stations using the termination of the downlink transmissions or reservations as a reference time for timing the release of the channel from uplink transmissions.

26. The method for distributed medium access of claim 22, which further comprises:

10 synchronizing the clocks of all stations; and

requiring the times at which stations must refrain from uplink transmissions to conform to a time schedule that is made known to all stations either a priori or in real time.

27. (AMENDED) The method for distributed access of claim 22, which further comprises:

15 choosing the times when the stations must refrain from uplink transmission to reflect the time of day, aggregate traffic intensity, or network conditions.

28. The method for distributed access of claim 21, which further comprises:

the stations receiving beam-specific traffic-related information that facilitates contention-based medium access.

29. The method for distributed medium access of claim 21, which further comprises:

20 allowing frames to be transmitted by a source before acknowledgement has been received for previously transmitted frames;

the destination using a compound acknowledgement for all unacknowledged frames received successfully from the same source; and

25 timing said acknowledgement to be sent, without necessarily any prompting, before the time when control of the channel is relinquished by said destination thus enabling the retransmission of any frames that are not successfully received by said time.

30. The method for distributed medium access of claim 29, which further comprises:

30 the access point sending a compound acknowledgement for all frames received successfully from stations covered by the same beam, thus reducing the transmit time used for acknowledgements.

31. An apparatus for transmission of frames in an infrastructure wireless access network, the apparatus comprising: an access point operative to communicate with a plurality of stations illuminated by multiple beams of an antenna system emanating from said access point, in which antenna system simultaneous communication on the same channel in opposite directions between said access point and any two stations covered by different beams is not possible, and communication is achieved through an asynchronous contention-based medium access control protocol that allows the initiation of transmission in continuous time by said access point if a station is not transmitting and by a station if said access point is not transmitting, and said access point occupies or reserves all beams if it has traffic to transmit on at least one beam, terminating downlink transmission or reservation on all beams simultaneously but not necessarily at a predetermined time.

32. The apparatus of claim 31, wherein communication on the uplink ceases by certain times, which are not necessarily periodic or determinable in advance, causing the channel to become available for transmissions by the access point.

33. The apparatus of claim 31, wherein the access point transmits dummy frames on certain beams so as to cause transmission on all beams to occur and terminate simultaneously.

34. The apparatus of claim 31, wherein the access point reserves the channel along a beam for a time duration by transmitting a frame on said beam, which frame contains said duration which is used by a station covered by said beam to set a timer that enables said station to determine whether it may transmit.

35. The apparatus of claim 31, wherein the access point sends a compound acknowledgement for all unacknowledged frames received successfully from stations covered by the same beam, and said acknowledgement is sent, without necessarily any prompting, before the time when control of the channel is relinquished by the access point thus enabling retransmission of any frames that are not successfully received by said time.

36. An apparatus for transmission of frames in an infrastructure wireless access network, the apparatus comprising: a station operative to communicate with an access point that illuminates each of a plurality of stations with multiple beams of an antenna system emanating from said access point, in which antenna system simultaneous communication on the same channel in opposite directions between said access point and any two stations covered by different beams is

not possible, wherein communication is achieved through an asynchronous contention-based medium access control protocol that allows the initiation of transmission in continuous time by said access point if a station is not transmitting and by a station if said access point is not transmitting, and channel reservation or communication on the downlink occurs and terminates on all beams simultaneously but not necessarily at a predetermined time.

37. The apparatus of claim 36, wherein communication on the uplink ceases by certain times, which are not necessarily periodic or determinable in advance, causing the channel to become available for downlink transmissions.

38. The apparatus of claim 36, wherein the termination of the downlink transmissions or reservations is used as a reference time for synchronizing the release of the channel from uplink transmissions.

39. The apparatus of claim 36, wherein the clocks of the stations are synchronized, and the stations must refrain from uplink transmissions according a time schedule that is made known to all stations either a priori or in real time and may optionally reflect the time of day, traffic intensity, or network conditions.

40. The apparatus of claim 36, wherein a compound acknowledgement is sent for all unacknowledged frames received successfully by a destination from the same source; and said acknowledgement is sent, without necessarily any prompting, before the time when control of the channel is relinquished by said destination thus enabling retransmission of any frames that are not successfully received by said time.